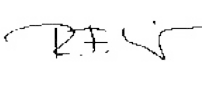
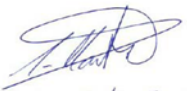




**SOLAR ORBITER ENERGETIC PARTICLE DETECTOR
EPT-HET & STEP EM Configuration Item
Data List /As Built Configuration List**

Document ID: SO-EPD-KIE-LI-0008
Issue: 1
Revision: 1
Date: 04/07/2014

Signature not needed if electronically approved by route					
Written	Checked	Approved Configuration Control	Approved QA	Approved Experiment Manager	Approved Principal Investigator
 César Martín Date and Signature	 Robert F. Wimmer Date and Signature	 César Martín Date and Signature	 NAME4 Date and Signature	 NAME5 Date and Signature	 NAME6 Date and Signature

File: SO-EPD-KIE-LI-0008-iss1_rev1-EM-CIDL-ABCL.doc

Pages: 19

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CHANGES RECORD

Issue	Revision	Date	Modified by	Section / Paragraph modified	Change implemented
1	0	26/03/2014	C. Martin	All	Initial release
1	1	04/07/2014	C. Martín	All	Updated docs after DRB

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1 APPLICABLE AND REFERENCE DOCUMENTS

1.1 Applicable Documents

ID.	Title	Reference	Iss./Rev.	Date
[AD-1] 1	Experiment Interface Document part A	SOL-EST-RCD-0050	42/08	1301/062/2 01314/10/2 011
[AD-2] 6	EPD Engineering Plan	SO-EPD- PO-PL- EP00001	3/20	2201/112/2 013
[AD-3]	EPD Product Assurance Plan	SO-EPD- PA- EP00001	3/3	2801/112/2 013
[AD-4]	EPD Cleanliness and Contamination Control Plan	SO-EPD- PO-PL- EP00005	2/1	2801/112/2 013
[AD-5] 1	Experiment Interface Document part B	SO-EPD-PO-IF-0001	32/28	2201/112/2 01314/10/2 011

Table 1-1: Applicable Documents

1.2 Reference Documents

None

2 SCOPE

The present Configuration Items Data List / As Built Configuration List identifies the applicable issue/revision of

- applicable requirement documents,
- specifications, drawings,
- engineering lists (materials, mechanical parts, EEE components, processes)

that represent the “As-Designed” and “As Built” configuration of the EPT-HET & STEP EM unit of the EPD consortium.

It is the objective of this document to provide all partners within the Solar Orbiter /EPD project with a common and reliable understanding of the design baseline of the project that is reflected in the above set of documents.

The document describes

- in section 4 the general EPT-HET EM configuration management organisation,
- in section 6 the document status list,

The CIDL/ABCL on system and sub-unit level contain in accordance with the EPD_DRD-20110226:

The CIDL/ABCL shall contain for each configuration item the following as a minimum:

- The reference of the configuration items including:
 - CI number
 - CI name.
 - CI level.
 - Company's code (supplier and buyer)
- The list of configuration baseline documents defining the configuration in terms of requirements, design and verification, with their evolution status including NCRs and RFWs and their approval status. These shall as a minimum include:
 - Drawings (Including assembly and interface drawings).
 - Circuit functional diagrams.
 - Specifications.
 - Test procedures and plans.
 - Design verification matrix.
 - EEE list.
 - Material, mechanical part and process list.
- The current configuration status (such as "as designed", "as built"),
- The status reports on changes, deviations and waivers,
- The status reports on change implementation and verification.

3 GLOSARY AND DEFINITIONS

3.1 Acronyms and Abbreviations

AIT	Assembly, Integration and Test
AIV	Assembly, Integration and Verification
BB	Bread Board
BDD	Block Diagram Drawing
BOL	Beginning Of Life
CC	Configuration Control
CIDL	Configuration Item Data List
CIL	Critical Item List
CVCM	Collected Volatile Condensable Material
DCL	Declared Components List
DDV	Design Development and Verification
DML	Declared Materials List
DMPL	Declared Mechanical Parts List
Doc.	Document
DPL	Declared Processes List
ECp	Engineering Change Proposal
EH	Electrical Harness
EICD	Experiment I/F Control Document
EMC	Electromagnetic compatibility
EOL	End Of Life
EPD	Energetic Particles Detector
EPT	Electron, Proton Telescope

FDIR	Failure Detection, Isolation and Recovery
FEE	Front End Electronics
FM	Flight Model
FMECA	Failure Mode, Effects, and Criticality Analysis
FPA	Focal Plane Assembly
GSE	Ground Support Equipment
HET	High Energy Telescope
H/W	Hardware
I/F	Interface
ICD	Interface Control Document
LLI	Long Lead Items
MAIT	Manufacturing, Assembly, Integration and Test.
MOC	Molecular Contamination
NA	Not Applicable / No applicable
NR	Normative Requirement
PA	Product Assurance
PAC	Particulate Contamination
PDF	Portable Document File
PDR	Preliminary Design Review
PIPS	Planar Implanted passivated Silicon
QA	Quality Assurance
RfD	Request for Deviation
RML	Recovered Mass Loss
SE	System Engineering
SRR	System Requirement Review

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SSD	Solid State Detector
STEP	SupraThermal Electrons and Protons
STM	Structural and Thermal Model
SW	Software
TAD	Top Assembly Drawing
TBC	To Be Confirmed
TBD	To Be Defined

4 ORGANISATION

4.1 Responsibility

Within the EPT-HET & STEP project, the configuration management is part of the tasks of the EPT-HET & STEP Project Manager.

EPT-HET & STEP configuration control is responsible for the systematic evaluation and co-ordination of all changes in the EPT-HET & STEP configuration. Configuration control ensures that all requirements and engineering documentation is identified and that all changes to that documentation will be reviewed in a systematic manner to determine the validity and impact of changes. Configuration control will also ensure that all affected organisations and parties will be cognisant of changes and will participate in the change decision making process. Configuration control activities start with the release of the first approval documentation.

4.2 Configuration accounting

Documents that shall be considered for the construction and manufacturing of any constituent of EPT-HET & STEP EM are those that are available:

- In paper format (located at the University of Kiel - Institut fuer Experimentelle und Angewandte Physik/ Extraterrestrische Physik)
- In electronic format
- As reference

Among others all documents that are listed within the present document are part of the EPT-HET & STEP Reference Library in electronic and paper format.

4.3 Software Version Number Method

N/A

4.4 Hardware marking and labeling

EPT-HET & STEP EM housing parts will be marked with special cleanroom pens and labels for the connectors, thermistor lines and external power wires.

5 EM RFD RFW AND NCR STATUS LIST

<i>Filename</i>	<i>EPD codification</i>	<i>Description</i>	<i>Delivered</i>	<i>Status</i>

CAU NCR Status List, Issue #, Date

NCR No	Classification	Issue / Date	Item Affected	Status	Description of Non-Conformance

6 DOCUMENTATION STATUS LIST

6.1 General

The documents listed below provide the general documentation overview/ status of all documents that are valid for the EPT-HET & STEP EM project. Those documents quoted in section 6.4 are contained as well.

6.2 Documentation structure

The EPT-HET & STEIN documentation is structured according to the following table. The entries in the column "document" are the main documents. The overall document configuration is given in section 6.4.

<i>Ident.</i>	<i>Discipline</i>	<i>Document</i>	<i>Bookkeeper</i>	<i>Remark</i>
01.00	External Applicable Documents			
01.01		Experiment Interface Document part A	ESA	
01.02		Experiment Interface Document part B	EPD Project Office	
02.00	External reference Documents			
03.00	Management, General Engineering, Contractual			
03.01		Project schedule	Univ. Kiel	
04.00	Configuration control			
04.01		Configuration item data list	Univ. Kiel	
04.02		RfW/RfA	Univ. Kiel	Copies and status list
04.03		NCRs	Univ. Kiel	Copies and status list
05.00	PA documents			
05.01		Declared Material, Parts and Process Lists	Univ. Kiel	
05.02		EPT-HET, SIS & STEIN Product Assurance Plan	Univ. Kiel	
05.03		EPD Product Assurance Plan	EPD PO	

06.00	Technical specifications			
06.01		EM EPT-HET & STEP interface document	Univ. Kiel	
07.00	Drawings			
07.01		MICDs	Univ. Kiel	
07.02		All (top level and detailed drawings)	Univ. Kiel	
08.00	CAD models			
08.01		Electrical Assembly Procedures EPT-HET & STEP EM	Univ. Kiel	
09.00	Software			
010.00	Verification and Validation Documents			
10.01		Test Procedures	Univ. Kiel	
10.02		Test Reports	Univ. Kiel	
10.03		Traceability & Verification Matrix	Univ. Kiel	
10.04		Instrument Assembly, Integration and Test Plan	Univ. Kiel	
11.00	Operations			
12.00	Scientific experiments			

6.3 Document nomenclature

The formal documents delivered to the EPD Project Office will follow the EPD Documentation Codification given in SO-EPD-PO-TN-0002 (CADs and MICDs of Kiel units will follow the nomenclature given in the EID-A).

Internal Kiel documents are identified by document type, number and author and/ or running numbers.

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6.4 All documents

Filename	Code	Description	Delivery	Responsible
SO-EPD-KIE-TP-0008_iss1_rev0_EPT-HET-EM-EMC-test-procedure.pdf	SO-EPD-KIE-TP-0008	EPT-HET EM EMC test plan and procedure	04.03.2014	CAU
SO-EPD-KIE-TP-0009_iss1_rev0_STEP-EM-EMC-test-procedure.pdf	SO-EPD-KIE-TP-0009	STEP (old STEIN) EM EMC test plan and procedure	07.03.2014	CAU
SO-EPD-KIE-TR-0008_iss1_rev1_EM-EPT-HET-EMC-test-report.pdf	SO-EPD-KIE-TR-0008	EPT-HET EM EMC test report	04.07.2014	CAU
SO-EPD-KIE-TR-0009_iss1_rev1_STEP-EM-EMC-test-report.pdf	SO-EPD-KIE-TR-0009	STEP (old STEIN) EM EMC test report	04.07.2014	CAU
SO-EPD-KIE-TP-00010_iss1_rev0_EPT-HET-EM-EMC-Functional-test-procedure.pdf	SO-EPD-KIE-TP-0010	EPT-HET EM Functional tests	07.04.2014	CAU
SO-EPD-KIE-TP-00011_iss1_rev1_STEP-EM-EMC-Functional-test-procedure.pdf	SO-EPD-KIE-TP-0011	STEP EM Functional tests	04.07.2014	CAU
SO-EPD-KIE-LI-0006_iss1_rev0_EM_EPT-HET_Shipping_list.pdf	SO-EPD-KIE-LI-0006	EPT-HET EM Shipping List	07.04.2014	CAU
SO-EPD-KIE-LI-0007_iss1_rev0_EM_EPT-HET_Shipping_list.pdf	SO-EPD-KIE-LI-0007	STEP (Old STEIN) Shipping List	07.04.2014	CAU
SO-EPD-KIE-LI-0008-iss1_rev1-EM-CIDL-ABCL .pdf	SO-EPD-KIE-LI-0008	Configuration Item Data List (CIDL) and As Built Coonfiguration List (ABCL)	04.07.2014	CAU
SO-EPD-KIE-PR-0004_iss1_rev0_EPT-HET_EM_Packing,Storing,transport,handling_procedure.pdf	SO-EPD-KIE-PR-0004	Packaging/Unpacking, Storing, Transport and Handling procedures EPT-HET EM	07.04.2014	CAU

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SO-EPD-KIE-PR-0005_iss1_rev1_STEP_EM_Packing,Storing,transport,handling_procedure.pdf	SO-EPD-KIE-PR-0005	Packaging/Unpacking, Storing, Transport and Handling procedures STEP EM	04.07.2014	CAU
SO-EPD-KIE-PR-0012_iss1_rev0_EPT-HET-EM-Integration-procedure.pdf	SO-EPD-KIE-PR-12	Integration guidelines of EPT-HET EM units with ICU	07.04.2014	CAU
SO-EPD-KIE-PR-0013_iss1_rev0_STEP-EM-Integration-procedure.pdf	SO-EPD-KIE-PR-13	Integration guidelines of STEP EM units with ICU	07.04.2014	CAU
In integration guidelines		Drawings, Diagrams & Pin functions 16a Mechanical Interface Control Drawings 16b Electrical Diagrams for heaters , temperature sensors, etc 16c Connectors Pin Function	07.04.2014	CAU
In integration guidelines		Pictures of EM units	07.04.2014	CAU
SO-EPD-KIE-LB-0003_iss1_rev0_EPT-HET-EM-Logbook.pdf	SO-EPD-KIE-LB-0003	Electrical Assembly Procedures EPT-HET EM (logbook)	07.04.2014	CAU
SO-EPD-KIE-LB-0004_iss1_rev0_STEP-EM-Logbook.pdf	SO-EPD-KIE-LB-0004	Electrical Assembly Procedures STEP EM (logbook)	07.04.2014	CAU

7 EPT-HET EM. ITEM UNDER TEST BUILD STANDARD REQUIREMENT

The following table summarizes the build standard of the EPT-HET EM compared with the EIDA R-554 from [AD-1]:

Table 7 EPT-HET EM build standard compared to EIDA R-544 from [AD-1].

EIDA R-544: The PI shall ensure that the instrument EM units have the following minimum build standard:	EPT-HET EM build standard	Comments
• electronics flight standard except for parts quality	Partially compliant	ALDEC adaptors for FPGAs, non-qualified soldering. LVPS interface tested and compliance.
• commercial parts have to be of same technology, same supplier as FM parts	Partially compliant	EEPROM and some passive parts not from same supplier of FM parts.
• mechanisms flight representative for electrical actuators	N/A	
• structure flight representative for mounting and shape	Partially compliant	Extra mechanical housing part to accommodate the FPGA adaptor.
• Electrically representative as needed for conducted EMC tests (emissions and susceptibility).	Compliant	
• Software flight standard as needed for all command/ control/ data interactions with the spacecraft.	Compliant	
• harness flight representative	Compliant	

8 STEP EM. ITEM UNDER TEST BUILD STANDARD REQUIREMENT

The following table summarizes the build standard of the STEP EM compared with the EIDA R-554 from [AD-1]:

Table 8. STEP EM build standard compared to EIDA R-544 from [AD-1].

EIDA R-544: The PI shall ensure that the instrument EM units have the following minimum build standard:	STEP EM build standard	Comments
• electronics flight standard except for parts quality	Partially compliant	Non-qualified soldering, digital board not FM representative. No detector system. LVPS interface tested and compliance.
• commercial parts have to be of same technology, same supplier as FM parts	Partially compliant	FPGA, EEPROM and some passive parts not from same supplier of FM parts.
• mechanisms flight representative for electrical actuators	N/A	
• structure flight representative for mounting and shape	Non-compliant	Old STEIN structure as agreed during the ESA-EPD STEIN meeting on 25.02.2013
• electrically representative as needed for conducted EMC tests (emissions and susceptibility).	Partially compliant	No detector system on EMC tests.
• software flight standard as needed for all command/ control/ data interactions with the spacecraft.	Compliant	
• harness flight representative	Compliant	

9 PICTURES

9.1 EPT-HET EM Assembly

http://www.ieap.uni-kiel.de/et/people/martin/EPT-HET_EM_pictures/EPT-HET_EM_Assembly/

9.2 STEP EM Assembly

http://www.ieap.uni-kiel.de/et/people/martin/STEP_EM_Pictures/STEP_EM_Assembly/

9.3 EPT-HET EM EMC Tests

TREO EMC test on EPT-HET/EM 20140317 Inrush current:

http://www.ieap.uni-kiel.de/et/people/martin/EPT-HET_EM_pictures/201470317_Inrush_Current/

TREO EMC test on EPT-HET/EM 20140317 Bonding grounding

http://www.ieap.uni-kiel.de/et/people/martin/EPT-HET_EM_pictures/20140317_Bonding_grounding/

TREO EMC test on EPT-HET/EM 20140317-18 Conductive Emission

http://www.ieap.uni-kiel.de/et/people/martin/EPT-HET_EM_pictures/20140317-18_Conducted_Emission/

TREO EMC test on EPT-HET/EM 20140318-19 Conductive Susceptibility

http://www.ieap.uni-kiel.de/et/people/martin/EPT-HET_EM_pictures/20140318-19_Conducted_Susceptibility/

9.4 STEP EM EMC Tests

TREO EMC test on STEP/EM 20140324 Inrush current

http://www.ieap.uni-kiel.de/et/people/martin/STEP_EM_Pictures/20140324_Inrush_Current/

TREO EMC test on STEP/EM 20140324 Bonding Grounding

http://www.ieap.uni-kiel.de/et/people/martin/STEP_EM_Pictures/20140324_Bonding_Grounding/

TREO EMC test on STEP/EM 20140324 Conductive Emission

http://www.ieap.uni-kiel.de/et/people/martin/STEP_EM_Pictures/20140324_Conductive_Emission/